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EXAMINER

VU, TRISHA U

| ART UNIT | PAPER NUMBER |
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2112

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/609,399

Applicant(s)

KAMEDA, KOHJI

Examiner

Trisha U. Vu

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07-03-00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-9 are presented for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Abramson et al. (6,131,135) (herein after Abramson).

As to claim 8, Abramson teaches an arbitration system, comprising: a bus bridge (Bus Interface Unit 140 and USB arbiter 145); a primary side bus (PCI Bus 130); and a plurality of secondary side buses (buses from USB Host Controller 1 and USB Host Controller 2) coupled to the primary side bus via said bus bridge (Fig. 1), wherein the bus

bridge is configured to give access rights equally to each of the secondary side buses (rotating arbitration), when access demands to the primary side bus are lodged from more than two of the secondary side buses at the same time, by not giving a priority to any one of the secondary side buses (col. 6, claim 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abramson et al. (6,131,135) (hereinafter Abramson) in view of Glover (6,282,045).

As to claim 1, Abramson teaches an arbitration method of a bus bridge (Bus Interface Unit 140 and USB arbiter 145) which interfaces a primary-side bus (PCI Bus 130) with a plurality of secondary side buses (buses from USB Host Controller 1 and USB Host Controller 2), the primary side bus being a local bus in a system and the secondary-side buses being external buses connected to the system (Fig. 1), the bus bridge supporting a plurality of kinds of operations one of which is an operation related to a serial bus in accordance with USB (Fig. 1), the arbitration method comprising the step of giving an access right equally to each of the secondary-side buses (rotating arbitration), when access demands to the primary-side bus are lodged from more than two

of the secondary-side buses at the same time, by not giving a priority to any one of the secondary-side buses (col. 6, claim 8). However, Abramson does not explicitly disclose one of bus operations is an operation in accordance with IEEE 1394. Glover teaches IEEE 1394 bus operation (col. 5, lines 47-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement IEEE 1394 bus(es) as taught by Glover in the system of Abramson because it provides higher data transfer rate than the USB for higher bandwidth applications (col. 5, lines 47-67).

As to claim 3, Abramson as modified above further teaches giving a priority right to the serial bus in accordance with IEEE1394; and maintaining the access right given to the serial bus in accordance with IEEE1394 when an access demand is lodged from the secondary-side buses (USB) other than the serial bus in accordance with IEEE1394 (fixed arbitration scheme) (col. 5, lines 31-34).

As to claim 5, Abramson further teaches changing an order of giving the access right (col. 6, claim 8 wherein it is inherent in the rotating arbitration that the order of giving the access right is changed in each arbitration).

4. Claims 2, 4, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abramson et al. (6,131,135) (hereinafter Abramson) and Glover (6,282,045) and further in view of Tang et al. (6,298,370) (hereinafter Tang).

As to claim 2, the argument above for claim 1 applies. Abramson as modified by Glover above further teaches that one of the secondary-side buses is the serial bus in accordance with IEEE1394 (as addressed in claim 1), and there can be more than two

secondary side buses (the arbiter can be configured to control two or more host controllers) (col. 5, lines 18-20). However, Abramson does not explicitly disclose the rest of the secondary-side buses are card buses. Tang teaches card-buses (col. 16, lines 1-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement card-buses as suggested by Tang for the rest of the secondary-side buses in the system of Abramson because card bus is the preferred high-speed mobile interconnect bus which adds high-bandwidth capabilities to the PC Card technology and helps it match the system performance achieved by today's PCI bus-based mobile computers.

As to claim 4, Abramson as modified above further teaches performing a first arbitration operation between the serial bus and at least two of the card-buses when access demands are lodged from the serial bus and also from the at least two of the card buses (rotating arbitration); and performing a second arbitration operation between the at least two of the card buses when an access right is to be given to only one of the at least two of the card buses (rotating arbitration) (note col. 6, claim 8 and col. 2, lines 51-65).

As to claim 9, the argument above for claim 8 applies. Abramson further teaches there can be more than two secondary side buses (the arbiter can be configured to control two or more host controllers) (col. 5, lines 18-20). However, Abramson does not explicitly disclose one of the secondary side buses is a serial bus in accordance with IEEE 1394. Glover teaches IEEE 1394 bus (col. 5, lines 47-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement IEEE 1394 bus(es) as taught by Glover in the system of Abramson because it

provides higher data transfer rate than the USB for higher bandwidth applications (col. 5, lines 47-67). However, Abramson and Glover do not explicitly disclose the rest of the secondary-side buses are card buses. Tang teaches card-buses (col. 16, lines 1-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement card-buses as taught by Tang for the rest of the secondary-side buses in the system of Abramson and Glover because card bus is the preferred high-speed mobile interconnect bus which adds high-bandwidth capabilities to the PC Card technology and helps it match the system performance achieved by today's PCI bus-based mobile computers.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abramson et al. (6,131,135) (hereinafter Abramson) in view of Glover (6,282,045), and further in view of Quackenbush et al. (6,163,824) (hereinafter Quackenbush).

As to claim 6, the argument above for claim 1 applies. However, Abramson and Glover do not explicitly disclose an arbitration scheme which gives a highest priority to the primary side bus when the primary-side bus lodges an access demand to the secondary-side buses irrespective of a condition of arbitration between the secondary side buses. Quackenbush discloses an arbitration scheme which assigns highest priority to a device (bridge 38 in processor side 16A) irrespective of a condition of arbitration between the other devices (controllers 42A-42H) (note col. 4. lines 42-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the arbitration scheme as suggested by Quackenbush to give a highest priority to the

primary side bus irrespective of a condition of arbitration between the secondary side buses in the system of Abramson and Glover to help minimize the access latency of the processor on the PCI local bus (note col. 4. lines 54-56).

As to claim 7, Abramson teaches an arbitration method of a bus bridge (Bus Interface Unit 140 and USB arbiter 145) which interfaces a primary-side bus (PCI Bus 130) with a plurality of secondary-side buses (buses from USB Host Controller 1 and USB Host Controller 2), the primary side bus being a local bus in a system and the secondary-side buses being external buses connected to the system (Fig. 1), the bus bridge supporting a plurality of kinds of operations one of which is an operation related to a serial bus in accordance with USB (Fig. 1). However, Abramson does not explicitly disclose one of bus operations is an operation in accordance with IEEE 1394. Glover teaches IEEE 1394 bus operation (col. 5, lines 47-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement IEEE 1394 bus(es) as taught by Glover in the system of Abramson because it provides higher data transfer rate than the USB for higher bandwidth applications (col. 5, lines 47-67). However, Abramson and Glover do not explicitly disclose an arbitration scheme which gives a highest priority to the primary-side bus when the primary-side bus lodges an access demand to the secondary-side buses irrespective of a condition of arbitration between the secondary side buses. Quackenbush discloses an arbitration scheme which assigns highest priority to a device (bridge 38 in processor side 16A) irrespective of a condition of arbitration between the other devices (controllers 42A-42H) (note col. 4. lines 42-56). It would have been obvious to one of ordinary skill in the art at the time the

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invention was made to use the arbitration scheme as suggested by Quackenbush to give a highest priority to the primary side bus irrespective of a condition of arbitration between the secondary side buses in the system of Abramson and Glover to help minimize the access latency of the processor on the PCI local bus (note col. 4. lines 54-56).

Response to Arguments

6. Applicant's arguments filed 11-21-03 have been fully considered but they are not persuasive:

With respect to Applicant's argument of claim 8 "Abramson fails to teach or suggest giving access rights equally to each of the secondary side buses..." (pages 1-2 of the Remarks), it is noted that Abramson does disclose giving an access right equally to each of the secondary-side buses by not giving a priority to any one of the secondary-side buses by using the rotating arbitration (col. 6, claim 8). Applicant further stated that "the Abramson device could have a predetermined arbitration sequence that is not equal, such as one USB controller having control of the bus for 2/3 of the access time to a primary bus and 1/3 of the time to the second USB controller, or any other conceivable sequence", this is found not persuasive. When both buses from controller 1 (C1) and controller 2 (C2) have access demands at the same time and for the very first time, rotating arbitration method will select either C1 or C2 (depending on the predetermined sequence), and the next time when both C1 and C2 have access demands, the rotating arbitration method will select the other one:

For example:

1st time: C1, C2 → C1 is selected

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2nd time: C1, C2 → C2 is selected

3rd time: C1, C2 → C1 is selected

4th time: C1, C2 → C2 is selected

and so on.

Thus, C1 and C2 have equal access by the rotating arbitration.

With respect to Applicant's argument of claims 1, 3, and 5 "Glover fails to teach or suggest a serial bus in accordance with IEE 1394 attempting to access the Host Bridge..." (page 2 of the Remarks), it is noted that all these limitations are taught in Abramson except one of bus operations is an operation in accordance with IEEE 1394. And therefore, Glover is used to show implementing IEEE 1394 bus to provide higher data transfer rate (col. 5, lines 47-67).

With respect to Applicant's argument of claims 6 and 7 "Quackenbush fails to teach or suggest a "primary side bus" and a "secondary side bus" interfaced by a bus bridge..." (page 8 of the Remarks), note that these limitations are taught by Abramson. Quackenbush reference was used to show the arbitration scheme which was not taught by Abramson in which a device is given a highest priority irrespective of arbitration condition of other devices (note col. 4, lines 42-56). And since this is an arbitration scheme, it can be used in any arbitration system, e.g. between devices, between buses, ... Thus, it would have been obvious to use the arbitration scheme of Quackenbush in the system of Abramson in which the bus connecting the host processor (PCI bus) is given the highest priority to minimize the access latency of the processor on the PCI bus.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha U. Vu whose telephone number is 703-305-5959. The examiner can normally be reached on Mon-Thur and alternate Fri from 7:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Trisha U. Vu
Examiner

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**SUMATI LEFKOWITZ
PRIMARY EXAMINER**

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